

Survey-based stock assessments

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Assessments of exploited fish stocks combine biological and fisheries information to gain understanding of the population dynamics of these stocks in response to fishing pressure, and provide policy makers with quantitative sustainable catch options for the following year(s). The traditional analytical assessment models are very data hungry, and rely on time-series of both fishery-dependent (collected in active fisheries) and fishery-independent data (collected on scientific surveys), often including details on the length and age structures of the stock, maturity ogives, natural and fishery-induced mortality rates, recruitment figures, and estimates of the total and spawning biomasses of the stock. Over the past few years, the number of fish stocks for which the European Commission requests catch advice from the community of European stock assessors (coordinated by ICES, the International Council for the Exploration of the Seas) has increased dramatically. However, many of these 'new' fish stocks do not have population estimates from which catch options can be derived using the existing advisory frameworks, as no funds have been made available previously to collect the required data. These cases have been labelled 'data-limited', and many of them will probably remain in this category for years to come as 1) the current economic climate makes it unlikely that the funds needed for data collection will become available in the short term, and 2) the construction of the fishery-dependent time-series that serve as input for the analytical models has just started for the economically more important stocks (funding priority). Meantime, fisheries managers still expect scientific catch advice for the data-limited stocks... For this purpose, stock assessment methodologies were developed that only rely on survey indices (or other reliable indicators of stock size, including commercial catches-per-unit-of-effort) that provide trends in stock metrics such as total mortality, recruitment and abundance and/or biomass. The general concept of survey-based catch advice is based on Russell's (1931) non-equilibrium definition of overfishing: when catch exceeds biological production and causes a reduction in the stock that is picked up by a survey, the catch should be incrementally decreased and vice versa. On this poster we elaborate on the survey-based assessment methodology, indicate how uncertainty in survey indices is addressed, and how further margins of precaution can be adopted when the stock status is poorly known. Finally we also illustrate how looking at abundance of different size classes in a survey can often be of help.

References

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Russell E.S. 1931. Some theoretical considerations on the «overfishing» problem. Conseil Permanent International pour l'Exploration de la Mer 6:3–20.